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THE ANNULUS OF TORTELLA CAESPITOSA (SCHWAEGR.) LIMPR.

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Works on bryology show much discrepancy, or even diversity, of statement regarding an annulus in *Tortella caespitosa* (Schwaegr.) Limpr. (*Barbula caespitosa* Schwaegr). My attention was called to this on finding in our dune region last July a moss identical in all respects with this quite common species except that it had a well defined annulus of 1–2 rows of cells. The Manual of Lesquereux and James, and the Musci of Sullivant in the second edition of Gray's Manual, both say, "annulus none." Nothing is said about the annulus in the descriptions of the three species of *Tortella* given in Grout's Mosses with Hand-lens and Microscope. Plate 32, reproduced from the "Bryologia Europea" to illustrate the species, does not show any in the figures of the peristome. Schimper, one of the authors of this work, says of *B. caespitosa* in his "Synopsis Mus. Europ." "*annulus nullus.*" On failing to identify the moss with any other *Tortella* or *Barbula* that might have an annulus the description of *T. caespitosa* in Limpricht's Laubmoose was consulted. In this it is stated that there is an annulus of three or four rows of cells detaching by fragments. This was the behavior in the moss at hand, though I did not find more than two series of cells in any peristome examined. Roth (Die Europ. Laubmoose) says 2 or 3 rows, and more extended examination might have covered this, since the rows of cells in the annulus of many mosses is quite variable. But as both of these authors state, it comes off in pieces. I did not find any part in place after detaching the operculum Other authorities consulted, who mention the annulus at all, say there is none or leave it to be thus inferred. Husnot (Muscologia Gallica) says, "pas d'anneau," Boulay (Muscinées de la France) does not give it in his description of *Barbula caespitosa*, but states that the peristome of this is like that of *B. tortuosa* Web. and Mohr, which is described as without an annulus.

Statements so directly opposite are not a little disconcerting, especially when made by leading bryologists. The species as first described and since given by the majority of authors would seem to have been without an annulus, or if such a character was sought and yet was present it was overlooked. The statement that it has none implies that examinations have been made for this purpose. It may mean that the moss varies in this respect from a peristome without an annulus to one that has 1-4 rows of cells.

It seems to be universally conceded that the moss as found in Europe, on which the descriptions of Limpricht and Roth are based, is the same as that from North America. It was described first by Schwaegrichen in 1811 from specimens collected by Muhlenberg in Pennsylvania. Mosses found in Sar-

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dinia in 1826 and afterwards in other parts of southern Europe were referred to it. Brotherus gives the general distribution as southern Europe, Caucasus, Algiers, North America, Jamaica and Brazil (Engler and Prantl. Nat. Pflanzenfam. **13**: 397). In his re-examination of the types of Hedwig and Schwaegrichen, Cardot says under *Barbula caespitosa*, "Ne diffère pas de la forme méditerranienne." (Bull. Herb. Boiss. **7**: 304. 1899.) Since the annulus is found in European forms and these are identified with those from America it follows that one should be looked for in American forms. Having found it in the examples from Dune Park I was led to examine those I have from other localities. The majority were not promising, being either too old or too young. One taken in July, 1875, within the present limits of Chicago looked favorable, the capsules ripe and the lid still in place. A capsule was put on a slide under the dissecting microscope, the lid carefully removed and the parts placed under a cover glass and transferred to the stage of a compound microscope. The parts of the broken and detached annulus were readily found. I should hardly expect to see one in place, it comes off so easily, nor find it except in some such way as the above. [This fully accounts for the diversity of statement. Ed.] Evidently it is easily overlooked unless the peristome is carefully manipulated. The moss in this region ripens its spores in June and July and capsules can then be found with the opercula still attached. Schwaegrichen gives August as the time those from Pennsylvania were collected by Muhlenberg. It would be advisable that those who collect this species examine it for the annulus.

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EGGS OF A MITE IN EMPTY CAPSULES OF ORTHOTRICHUM PUSILLUM

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From the bark of an old willow tree near Wycombe in Bucks county, Pennsylvania, I collected on the 30th of May, 1912, specimens of the moss *Orthotrichum pusillum*, which exhibited curious conditions.

In the first mount I made of this *Orthotrichum* the capsules were either empty or filled with oval spore masses, some of which had escaped in the process of mounting, leaving them isolated in the glycerine jelly. These had not been broken up by the boiling to which they had been subjected in mounting.

They seemed so anomalous, however, that I decided to carefully examine the remaining material. In making some additional mounts I found unopened capsules in which the spores were not aggregated into such oval masses. This indicated that there was something "funny" about the latter.

A little study of unmounted material solved the problem. The moss was infested with small mites; they had selected the open cap ules in which to lay their oval transparent eggs. The latter were sufficiently glutinous to cement to them a layer of spores, so strongly adherent that even boiling failed to remove hem. Some of the capsules were practically filled with such eggs.